satisfy sons'. A review of all related studies shows a strong positive association between degree of sexual size dimorphism and gender difference in food requirements in nestling birds.

THE EFFECT OF WEATHER ON BREEDING SUCCESS IN ELEONORA'S FALCON (*FALCO ELEONORAE*)

BADAMI, A. *via E. Manfredi 17, 00197 Rome, Italy*

During five breeding seasons (August–October, 1987–1991) data on the reproductive biology and ecology of the Eleonora's falcon (*Falco eleonorae*), an endemic raptor of the Mediterranean region, were collected in a breeding colony in southwestern Sardinia (Italy). Since this population is not affected by human or natural predation or diseases, and it is almost undisturbed, the aim of the study was to verify whether and how weather conditions can influence the breeding performance of this rare falcon. Data from my own long-term study lead to the hypothesis that Eleonora's falcons are highly dependent on weather factors during their breeding cycle. This paper examines some breeding parameters in relation to rainfall, temperature, humidity and wind during the breeding season. Breeding performance of Eleonora's falcon was highly negatively correlated with rainfall in August and September. The number of young fledged per laying pair was related to September–October temperature and negatively correlated with humidity of September–October. Wind did not apparently influence the breeding cycle of this species; only in nests on open ledges were the number of young fledged per successful pair negatively related to wind speed in September. All these relationships showed that the hatching period and the subsequent 3 wk were most important for chick survival and that weather can affect breeding success either directly (with the death of chicks) or indirectly (by reducing the food supply of adults and chicks). Because of the vulnerability of this falcon to meteorological factors and because of its rarity, all known breeding colonies need to be included in natural parks.

COMPARISON OF ROADSIDE COUNTS AND RADIOTELEMETRY TO DETERMINE HABITAT USE OF FERRUGINOUS HAWKS WINTERING ON ROCKY MOUNTAIN ARSENAL, COLORADO

BEANE, R.D. AND C.R. PRESTON. *Zoology Department, Denver Museum of Natural History and Department of Biology, University of Colorado, 2001 South Colorado Boulevard, Denver, CO 80205 U.S.A.*

The ferruginous hawk (*Buteo regalis*) is currently classified as a candidate species for inclusion on the federal Threatened and Endangered species list. As a migratory raptor, the over-wintering condition of ferruginous hawks is important to the overall reproductive rate of the species. However, little information is available on the habitat use of wintering ferruginous hawks. We used two standard methods, roadside counts and radiotelemetry tracking, to evaluate habitat use of ferruginous hawks wintering on Rocky Mountain Arsenal (RMA), northeast of Denver, Colorado. A comparison of the similarities and differences of the two survey methods will be presented. The results of this study will provide information on the advantages, disadvantages, and applicability of survey methods to evaluate raptor habitat use. The RMA has recently been designated a national wildlife area and is also a major superfund site currently in the initial stages of extensive cleanup operations. Providing habitat use information will allow the U.S. Fish and Wildlife Service to manage resources, wildlife viewing opportunities, and provide input into cleanup operations that may impact ferruginous hawks

BALD EAGLE MANAGEMENT IN ARIZONA

BEATTY, G.L. *Arizona Game and Fish Department, 2221 West Greenway Road, Phoenix, AZ 85023-4399 U.S.A.*

Arizona supports a small (31 breeding areas), isolated population of desert nesting bald eagles (*Haliaeetus leucocephalus*) located near the Phoenix metropolitan area. Environmental conditions and increasing demands for development, recreation and water use present management challenges. The Southwestern Bald Eagle Management Committee affords a means of coordinating interagency projects such as annual statewide nest surveys and winter counts, banding of nestlings, monthly occupancy and reproduction assessment flights and the Arizona Bald Eagle Nestwatch Program. Relative success of these efforts toward management, conservation, and recovery of the bald eagle in the southwest will be evaluated.

THE EFFECTS OF HUMAN ACTIVITIES ON THE PRODUCTIVITY OF BIRDS OF PREY IN THE LOS MEDANOS AREA, NEW MEXICO

BEDNARZ, J.C. *Department of Biological Science, Arkansas State University, State University, AR 72467 U.S.A.* T.J. HAYDEN. *Construction Engineering Research Lab, P.O Box 9005, Champaign, IL 61826 U.S.A.*

We monitored productivity of Harris' hawks (*Parabuteo unicintus*), Swainson's hawks (*Buteo swainsoni*), and great horned owls (*Bubo virginianus*) in the vicinity of the construction site of the Waste Isolation Pilot Plant (WIPP) and an adjacent CONTROL area between 1985 and 1990 In most cases, reproductive performance of raptors was slightly lower inside the WIPP study plot than within the CONTROL site. The only significant difference occurred in 1985 when development of the WIPP project proceeded without any management buffer zones placed around occupied raptor nests. Since 1985, no perceptible difference in reproductive performance occurred between the WIPP and the CONTROL sites in years when prey were plentiful. Raptor productivity, however, exhibited discernible reductions near the vicinity of WIPP when prey popu-